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Our Ref: P022828WO AAW LSB

17 June 2005

Dear Sirs

**International PCT Patent Application No PCT/GB04/004439
British American Tobacco (Investments) Limited**

We write with reference to the Written Opinion of the International Searching Authority (WO-ISA) and our letter dated 23 May 2005 confirming that we intended to file a formal response to the WO-ISA. We now enclose our formal response to the WO-ISA, as promised.

We enclose herewith a replacement claim set. Please replace the claim set on file (pages 38-45) with the replacement claim set (pages 48-58) enclosed herewith. For your ease of reference, we also enclose a copy of the original claim set with our proposed amendments detailed thereon in manuscript.

In addition, the original claim set has been included as numbered paragraphs (see amended pages 38-47 enclosed herewith).

As you will see, new claims 1-49 have been amended to include the technical feature that the foaming agent and the agent capable of forming chemical cross linkages are provided by the same material, thereby providing a foaming agent capable of forming chemical cross-linkages and wherein the foaming agent capable of forming chemical cross-linkages is a foaming alginate. This has been achieved by amending claim 1 to incorporate the subject matter of original claims 2 and 3. This amendment has necessitated the deletion of original claims 2 and 3 and the renumbering of the subsequent claims and claim dependencies. Original claim 77 (now claim 36) and original claim 78 (now claim 37) have been amended to include the feature that the foaming agent is a foaming alginate. Basis for this amendment can be found on page 1, lines 1-2 of the last paragraph of the published specification (WO2005/044026).

New claims 50-96 now relate to the second aspect where the foaming agent and the agent capable of forming chemical cross-linkages are provided by different materials.

New claims 1-49 are both novel and inventive over the cited prior art documents, as none of these documents teaches a smokable filler material comprising a foaming agent capable of forming chemical cross-linkages which foaming agent is a foaming alginate and a cross-linking agent. In addition, none of the cited prior art documents teaches the use of a foaming alginate to provide a smokable filler material having a stabilised foamed structure.

Each of the cited prior art documents is reviewed in turn below.

D1 (US 5,129,408)

D1 teaches a cigarette and smokable filler material therefor which filler material comprises an agglomerated matrix filler in particulate form. The organic component of the agglomerated matrix filler may be an alginate or other organic material capable of providing an agglomerated matrix filler which is essentially insoluble in water at ambient conditions (see column 2, lines 58-63). The agglomerated matrix filler may have an inorganic component which may be calcium carbonate (see column 2, lines 63-65). Finally, the smokable filler material comprising a binding agent in intimate contact with the agglomerated matrix filler and tobacco. The alginate used in D1 is ammonium alginate (see for example Example 1, (column 17, lines 6-8); Example 2 (column 18, lines 50-51); and Example 3 (column 19, line 68).

Ammonium alginate, however, is NOT a foaming alginate in accordance with the present invention. As noted in the present application (see for example page 4, 4th paragraph of the published specification of the International Application) – ammonium alginate is a “NON-FOAMING” agent capable of forming chemical cross-linkages. In contrast, the foaming alginate (see page 1, last paragraph) is an esterified alginate for example, such as propylene glycol alginate.

Therefore, nowhere in D1 is a smokable filler material comprising a foaming agent capable of forming chemical cross-linkages which foaming agent is a foaming alginate and a cross-linking agent taught or even suggested.

Thus, claims 1-38 are novel and inventive over D1.

D2 – GB 1 444 721

D2 relates to a method of manufacturing product material including the steps of producing a mix including a water-insoluble alginate (p2, RHC, lines 90-93). When the water-insoluble alginate is calcium alginate then it was contemplated that the product material could be used (with or without tobacco) in or as smokable material (see p2, RHC, lines 114-118).

However, calcium alginate is NOT a foaming alginate in accordance with the present invention.

Nowhere in D2 is it taught or even suggested that the calcium alginate is or may be foamed.

Therefore, nowhere in D2 is a smokable filler material comprising a foaming agent capable of forming chemical cross-linkages which foaming agent is a foaming alginate and a cross-linking agent taught or even suggested

Thus, claims 1-38 are both novel and inventive over D2.

D3 – US4,625,737

D3 teaches a foamed, extruded, tobacco-containing smoking article and improved methods of making same.

Nowhere in D3 is the use of a foaming alginate taught.

Although at column 2, lines 31-36 it is suggested that the slurry may also include an additive which may be *inter alia* an alginic acid and its sodium, potassium, ammonium, calcium or magnesium salts – none of these alginates are foaming alginates in accordance with the present invention.

In this regard, we direct you to page 4, 4th paragraph of the published specification of the present International Application – it is clear that sodium, ammonium and potassium alginates are “NON-FOAMING” agents capable of forming chemical cross-linkages. In contrast, the foaming alginate (see page 1, last paragraph) is an esterified alginate for example, such as propylene glycol alginate.

Therefore, nowhere in D1 is a smokable filler material comprising a foaming agent capable of forming chemical cross-linkages which foaming agent is a foaming alginate and a cross-linking agent taught or even suggested.

Thus, claims 1-38 are novel and inventive over D3.

D4 – EP 0 332 268

D4 teaches a method for producing a high void volume/enhanced firmness tobacco rod which may be wrapped to form a cylindrical tobacco product such as a cigarette.

Nowhere in D4 is it taught or even suggested to use a foaming alginate in accordance with the present invention.

In D4 a foamed binder is added to tobacco filler, the filler shreds are treated to the extent necessary to cause the binder to become sufficiently non-tacky for storage or processing (such as by drying or dehumidifying) and then activating the binder within the cigarette maker by the use of steam, heat, water, conditioned air or an organic solvent (see column 5, lines 38-45). Thus, D4 teaches the use of binders to cause adherence of the tobacco filler once formed into a cigarette in a cigarette making machine – thus to provide an enhanced firmness tobacco rod.

Although D4 teaches (for example in Example 2 and Example 7) that sodium alginate may be added to the tobacco filler blend – as noted above sodium alginate is NOT a foaming alginate in accordance with the present invention. In contrast, sodium alginate is a “NON-FOAMING” agent capable of forming chemical cross-linkages.

Thus, claims 1-38 are novel and inventive over D4.

D5 – US 3,968,804

D5 teaches a method for the systematic production of controlled and reduced density reconstituted tobacco materials from comminuted tobacco, or tobacco waste or fines. The extrusion process involves mixing a thermoplastic adhesive with tobacco particles rendering the composition formable or at least semi-molten as by disposing the resulting composition in a first enclosed zone maintained at elevated temperature and pressure, introducing an inert gas, working said composition to effect a uniform distribution of fine bubbles therein, expression the composition through a fine orifice to form the composition into the shape of the orifice, cooling and hardening.

Nowhere in D5 is it taught or even suggested that the composition could comprise an alginate, let alone a foaming alginate in accordance with the present invention.

Thus, claims 1-38 are novel and inventive over D5.

In summary

None of the cited prior art documents teaches a smokable filler material comprising a foaming agent capable of forming chemical cross-linkages which foaming agent is a foaming alginate and a cross-linking agent. In particular, none of the cited prior art documents teaches or even suggests the use of a foaming alginate to provide a smokable filler material having a stabilised, foamed structure.

Therefore, claims 1-38 of the present application are both novel and inventive over each of D1 to D5 either taken alone or in combination.

The amendment and/or deletion of any subject matter appearing in the application does not constitute an abandonment of such subject matter and Applicant reserves the right to file one or more divisional patent applications directed to such subject matter.

Please acknowledge safe receipt by stamping and returning one copy of the enclosed Form 1037.

Yours faithfully
for D Young & Co

Aylsa Williams

~~Claims~~*Numbered Paragraphs:**Certain aspects of the present invention will now be described by way of numbered paragraphs.*

1. A smokable filler material comprising a foaming agent, an agent capable of forming chemical cross-linkages, and a cross-linking agent, wherein, when combined, the foaming agent in the foamed state thereof, the agent capable of forming chemical cross-linkages and the cross-linking agent provided a stabilised, foamed material.
2. A smoking material according to ^{paragraph} ~~Claim~~ 1, wherein the foaming agent and the agent capable of forming chemical cross-linkages are provided by the same material, thereby providing a foaming agent capable of forming chemical cross-linkages.
3. A smoking material according to ^{paragraph} ~~Claim~~ 1 or 2, wherein the foaming agent capable of forming chemical cross-linkages is a foaming alginate.
4. A smoking material according to ^{paragraph} ~~Claim~~ 3, wherein the foaming alginate is an esterified alginate.
5. A smoking material according to ^{paragraph} ~~Claim~~ 3 or 4, wherein the foaming alginate is propylene glycol alginate.
6. A smoking material according to any one of ^{paragraphs} ~~Claims~~ 1-5, wherein the foaming agent capable of forming chemical cross-linkages is present at between about 30% and about 95% by weight of the dry smokable filler material.
7. A smoking material according to any preceding ^{paragraph} ~~claim~~, wherein the cross-linking agent is an agent which provides free calcium ions in aqueous solution.
8. A smoking material according to ^{paragraph} ~~Claim~~ 7, wherein the cross-linking agent may be a calcium salt which salt is soluble or sparingly soluble at neutral pH (pH 7.0).
9. A smoking material according to ^{paragraph} ~~Claim~~ 7 or 8, wherein the cross-linking agent is one or more of calcium sulphate or calcium citrate.
10. A smoking material according to ^{paragraph} ~~Claim~~ 7, wherein the cross-linking agent is a calcium salt which is insoluble at neutral pH, which salt becomes soluble or sparingly soluble at acidic pH.
11. A smoking material according to ^{paragraph} ~~Claim~~ 10, wherein the cross-linking agent is calcium carbonate or calcium phosphate.

12. A smoking material according to ^{paragraph} ~~Claim~~ 7, wherein the cross-linking agent is a calcium salt which is soluble or sparingly soluble, which salt forms an alkaline solution.
13. A smoking material according to ^{paragraph} ~~Claim~~ 12, wherein the cross-linking agent is calcium hydroxide.
14. A smoking material according to any one of ^{paragraphs} ~~Claims~~ 7-13, wherein the foaming agent capable of forming chemical cross-linkages is present in the range of about 61% to about 90% by weight of the dry smokable filler material.
15. A smoking material according to any one of ^{paragraphs} ~~Claims~~ 8-14, wherein the cross-linking agent is present in the range of between about 1.0% and about 11% by weight of the dry smokable filler material.
16. A smoking material according to ^{paragraph} ~~Claim~~ 7, wherein the cross-linking agent is a tobacco material.
17. A smoking material according to any one of ^{paragraphs} ~~Claims~~ 8-13, wherein the cross-linking agent is further provided by tobacco.
18. A smoking material according to ^{paragraph} ~~Claim~~ 16 or 17, wherein the foaming agent capable of forming chemical cross-linkages is present in the range of about 30% to about 80% by weight of the dry smokable filler material.
19. A smoking material according to any one of ^{paragraphs} ~~Claims~~ 16-18, wherein the tobacco material is present in the range of about 10% to about 60% by weight of the dry smokable filler material.
20. A smoking material according to ^{paragraph} ~~Claim~~ 19, wherein the tobacco is present at about 20% by weight of the dry smokable filler material.
21. A smoking material according to ^{paragraph} ~~Claim~~ 17, wherein the calcium salt is present in the range of about 1.0% to about 6% by weight of the dry smokable filler material.
22. A smoking material according to any one of the preceding ^{paragraphs} ~~Claims~~, further comprising a non-alginic foaming agent.
23. A smoking material according to ^{paragraph} ~~Claim~~ 22, wherein the non-alginic foaming agent is a foaming agent incapable of forming chemical cross-linkages.

24. A smoking material according to ^{paragraph} ~~Claim~~ 22 or 23, wherein the non-alginic foaming agent is a foaming surfactant.
25. A smoking material according to ^{paragraph} ~~Claim~~ 24, wherein the foaming surfactant is one or more of the group including celluloses capable of foaming, for example hydroxylpropyl cellulose, methyl cellulose or ethyl cellulose, starch, proteins, for example egg albumin, sugar esters.
26. A smoking material according to any one of the preceding ^{paragraphs} ~~Claims~~, further comprising a non-foaming agent capable of forming chemical cross-linkages.
27. A smoking material according to ^{paragraph} ~~Claim~~ 26, wherein the non-foaming agent capable of forming chemical cross-linkages is a soluble alginate.
28. A smoking material according to ^{paragraph} ~~Claim~~ 27, wherein the non-foaming agent capable of forming chemical cross-linkages is one or more of sodium alginate, ammonium alginate and potassium alginate.
29. A smoking material according to any one of ^{paragraph} ~~Claims~~ 1 to 21, further comprising a non-alginic foaming agent and a non-foaming agent capable of forming chemical cross-linkages.
30. A smoking material according to ^{paragraph} ~~Claim~~ 29, wherein the non-alginic foaming agent is a foaming agent incapable of forming chemical cross-linkages.
31. A smoking material according to ^{paragraph} ~~Claim~~ 1, wherein the foaming agent and the agent capable of forming chemical cross-linkages are provided by different materials.
32. A smoking material according to ^{paragraph} ~~Claim~~ 31, wherein the smokable filler material comprises a non-alginic foaming agent.
33. A smoking material according to ^{paragraph} ~~Claim~~ 32, wherein the non-alginic foaming agent is incapable of forming chemical cross-linkages.
34. A smoking material according to ^{paragraph} ~~Claim~~ 32 or 33, wherein the non-alginic foaming agent may be a foaming surfactant.
35. A smoking material according to ^{paragraph} ~~Claim~~ 34, wherein the foaming surfactant is one or more of the group including celluloses capable of foaming, for example

hydroxylpropyl cellulose, methyl cellulose or ethyl cellulose, starch, proteins, for example egg albumin and sugar esters.

36. A smoking material according to any one of ^{paragraphs} ~~Claims~~ 32-35, wherein the non-alginic foaming agent is present in the range of about 0.5% to about 70% by weight of the dry smokable filler material.
37. A smoking material according to ^{paragraph} ~~Claim~~ 31, wherein the cross-linking agent is an agent which provides free calcium ions in aqueous solution.
38. A smoking material according to ^{paragraph} ~~Claim~~ 37, wherein the cross-linking agent is a calcium salt which salt is soluble or sparingly soluble at neutral pH (pH 7.0).
39. A smoking material according to ^{paragraph} ~~Claim~~ 37 or 38, wherein the cross-linking agent is one or more of calcium sulphate or calcium citrate.
40. A smoking material according to ^{paragraph} ~~Claim~~ 37, wherein the cross-linking agent is a calcium salt which is insoluble at neutral pH, which salt becomes soluble or sparingly soluble at acidic pH.
41. A smoking material according to ^{paragraph} ~~Claim~~ 40, wherein the cross-linking agent is calcium carbonate or calcium phosphate.
42. A smoking material according to ^{paragraph} ~~Claim~~ 37, wherein, the cross-linking agent is a calcium salt which is soluble or sparingly soluble, which salt forms an alkaline solution.
43. A smoking material according to ^{paragraph} ~~Claim~~ 42, wherein the cross-linking agent is calcium hydroxide.
44. A smoking material according to any one of ^{paragraphs} ~~Claims~~ 38-43, wherein the cross-linking agent is present in a range of between about 0.5% and about 50% by weight of the dry smokable filler material.
45. A smoking material according to ^{paragraph} ~~Claim~~ 37, wherein the cross-linking agent is calcium carbonate, the cross-linking agent being present at between about 40% to about 60% by weight of the dry smokable filler material.
46. A smoking material according to any one of ^{paragraphs} ~~Claims~~ 38-43, wherein the cross-linking agent is further provided by tobacco.

47. A smoking material according to ^{paragraph} Claim 37, wherein the cross-linking agent is a tobacco material.
48. A smoking material according to ^{paragraph} Claim 46, wherein the calcium salt is present in a range of about 0.5% to about 8.0% by weight of the dry smokable filler material.
49. A smoking material according to ^{paragraph} Claim 46 or 47, wherein the tobacco is present in the range of about 10% to about 60% by weight of the dry smokable filler material.
50. A smoking material according to any one of ^{paragraphs} Claims 38-45, wherein the non-alginic foaming agent is present in the range of about 0.5% to about 70% by weight of the dry smokable filler material.
51. A smoking material according to ^{paragraph} Claim 46, wherein the non-alginic foaming agent is present in the range of about 2% to about 25% by weight of the dry smokable filler material.
52. A smoking material according to ^{paragraph} Claim 47, wherein the non-alginic foaming agent is present in the range of about 4% to about 35% by weight of the dry smokable filler material.
53. A smoking material according to any one of ^{paragraphs} Claims 31-52, wherein the non-foaming agent capable of forming chemical cross-linkages is a soluble alginate.
54. A smoking material according to ^{paragraph} Claim 53, wherein the soluble alginate is one or more of sodium alginate, ammonium alginate or potassium alginate.
55. A smoking material according to ^{paragraph} Claim 53 or 54, wherein the non-foaming agent capable of forming chemical cross-linkages is present in a range of about 3% to about 70% by weight of the dry smokable filler material.
56. A smoking material according to ^{paragraph} Claim 55, wherein when the cross-linking agent is in accordance with any one of ^{paragraphs} claims 38-45, the non-foaming agent capable of forming chemical cross-linkages is present in the range of about 3% to about 70% by weight of the dry smokable filler material.
57. A smoking material according to ^{paragraph} Claim 55, wherein when the cross-linking agent is in accordance with claim 46, the non-foaming agent capable of forming chemical cross-

linkages is present in the range of about 3% to about 55% by weight of the dry smokable filler material.

58. A smoking material according to ^{paragraph} ~~Claim~~ 55, wherein, when the cross-linking agent is tobacco the non-foaming agent capable of forming chemical cross-linkages is preferably present in the range of about 6% to about 60% by weight of the dry smokable filler material.

59. A smoking material according to any one of the preceding ^{paragraphs} ~~Claims~~, wherein the smokable filler material is a self-supporting foam when dried.

60. A smoking material according to ^{paragraph} ~~Claim~~ 59, wherein, when dried, smokable filler material has a moisture content in the range of 0% to about 30%.

61. A smoking material according to any one of the preceding ^{paragraphs} ~~Claims~~, further comprising aerosol generating means.

62. A smoking material according to ^{paragraph} ~~Claim~~ 61, wherein the aerosol generating means comprises aerosol forming means.

63. A smoking material according to ^{paragraph} ~~Claim~~ 62, wherein the aerosol forming means is one or more of polyhydric alcohols, glycerol, propylene glycol and triethylene glycol, esters or high boiling point hydrocarbons.

64. A smoking material according to any one of ^{paragraphs} ~~Claims~~ 61-63, wherein the aerosol generating means is present at between 0% and 65% by weight of the dry smokable filler material.

65. A smoking material according to any one of the preceding ^{paragraphs} ~~Claims~~, further comprising an inorganic filler material.

66. A smoking material according to ^{paragraph} ~~Claim~~ 65, wherein the inorganic filler material is a particulate material.

67. A smoking material according to ^{paragraph} ~~Claim~~ 65 or 66, wherein the inorganic filler material is one or more of perlite, zeolite, alumina, vermiculite, diatomaceous earth, colloidal silica, chalk, magnesium oxide, magnesium sulphate or magnesium carbonate.

68. A smoking material according to any one of the preceding ^{paragraphs} ~~Claims~~, further comprising a colourant and/or a flavourant material.

69. A smoking material according to ^{paragraph} ~~Claim~~ 68, wherein the flavourant and/or colourant is one or more of cocoa, liquorice, caramel, chocolate, toffee, tobacco extract flavours, menthol and vanillin.
70. A smoking material according to ^{paragraph} ~~Claim~~ 68 or 69, wherein the flavourant and/or colourant is present in a range of about 0.2% to about 5% by weight of the dry smokable filler material.
71. A smoking material according to any one of the preceding ^{paragraphs} ~~claims~~, further comprising a fibrous material.
72. A smoking material according to ^{paragraph} ~~Claim~~ 71, wherein the fibrous material is one or more of tobacco, wood pulp, cellulosic or alginic material.
73. A smoking material according to any one of the preceding ^{paragraphs} ~~claims~~, further comprising a carbonaceous material.
74. A smoking material according to any one of the preceding ^{paragraphs} ~~claims~~, further comprising a binder material.
75. A smoking article comprising a rod of smoking material enwrapped in a wrapper, the smoking material comprising a blend, which blend incorporates the smokable filler material according to any one of ^{paragraphs} ~~claims~~ 1-74.
76. A smoking article comprising a rod of smoking material enwrapped in a wrapper, the smoking material consisting essentially of the smokable filler material according to any one of ^{paragraphs} ~~claims~~ 1-74.
77. A method of producing a foamed smokable filler material comprising the steps of:
- producing a foam from a foaming agent, which foaming agent is capable of forming chemical cross-linkages;
 - mixing said foam with a cross-linking agent;
 - forming a slurry from said mix;
 - casting said slurry; and
 - drying said slurry to form a foamed sheet material.
78. A method of producing a foamed smokable material comprising the steps of:

- a) mixing a foaming agent capable of forming cross-linkages and a cross-linking agent; and
- b) extruding said mixture such that upon exiting an extruder die a stabilised foamed material is provided.

79. A smoking material substantially as hereinabove described.

~~38~~ 46
Claims

1. A smokable filler material comprising a foaming agent, ~~an agent~~ capable of forming chemical cross-linkages, and a cross-linking agent, wherein, when combined, the foaming agent in the foamed state thereof, ~~the agent capable of forming chemical cross-linkages~~ and the cross-linking agent provided a stabilised, foamed material.
- ~~2. A smoking material according to Claim 1, wherein the foaming agent and the agent capable of forming chemical cross-linkages are provided by the same material, thereby providing a foaming agent capable of forming chemical cross-linkages.~~
- ~~3. A smoking material according to Claim 1 or 2, wherein the foaming agent capable of forming chemical cross-linkages is a foaming alginate, and~~
- 2 ~~4.~~ A smoking material according to Claim ~~3~~¹, wherein the foaming alginate is an esterified alginate.
- 3 ~~5.~~ A smoking material according to Claim ~~3~~¹ or ~~4~~², wherein the foaming alginate is propylene glycol alginate.
- 4 ~~6.~~ A smoking material according to any one of Claims 1-~~5~~³, wherein the foaming agent capable of forming chemical cross-linkages is present at between about 30% and about 95% by weight of the dry smokable filler material.
- 5 ~~7.~~ A smoking material according to any preceding claim, wherein the cross-linking agent is an agent which provides free calcium ions in aqueous solution.
- 6 ~~8.~~ A smoking material according to Claim ~~7~~⁵, wherein the cross-linking agent may be a calcium salt which salt is soluble or sparingly soluble at neutral pH (pH 7.0).
- 7 ~~9.~~ A smoking material according to Claim ~~7~~⁵ or ~~8~~⁶, wherein the cross-linking agent is one or more of calcium sulphate or calcium citrate.
- 8 ~~10.~~ A smoking material according to Claim ~~7~~⁵, wherein the cross-linking agent is a calcium salt which is insoluble at neutral pH, which salt becomes soluble or sparingly soluble at acidic pH.
- 9 ~~11.~~ A smoking material according to Claim ~~10~~⁸, wherein the cross-linking agent is calcium carbonate or calcium phosphate.

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- 10 ~~12~~. A smoking material according to Claim ~~7~~⁵, wherein the cross-linking agent is a calcium salt which is soluble or sparingly soluble, which salt forms an alkaline solution.
- 11 ~~13~~. A smoking material according to Claim ~~12~~¹⁰, wherein the cross-linking agent is calcium hydroxide.
- 12 ~~14~~. A smoking material according to any one of Claims ~~7-13~~⁵⁻¹¹, wherein the foaming agent capable of forming chemical cross-linkages is present in the range of about 61% to about 90% by weight of the dry smokable filler material.
- 13 ~~15~~. A smoking material according to any one of Claims ~~8-14~~⁶⁻¹², wherein the cross-linking agent is present in the range of between about 1.0% and about 11% by weight of the dry smokable filler material.
- 14 ~~16~~. A smoking material according to Claim ~~15~~⁵, wherein the cross-linking agent is a tobacco material.
- 15 ~~17~~. A smoking material according to any one of Claims ~~8-15~~⁶⁻¹¹, wherein the cross-linking agent is further provided by tobacco.
- 16 ~~18~~. A smoking material according to Claim ~~16~~¹⁴ or ~~17~~¹⁵, wherein the foaming agent capable of forming chemical cross-linkages is present in the range of about 30% to about 80% by weight of the dry smokable filler material.
- 17 ~~19~~. A smoking material according to any one of Claims ~~16-18~~¹⁴⁻¹⁶, wherein the tobacco material is present in the range of about 10% to about 60% by weight of the dry smokable filler material.
- 18 ~~20~~. A smoking material according to Claim ~~19~~¹⁷, wherein the tobacco is present at about 20% by weight of the dry smokable filler material.
- 19 ~~21~~. A smoking material according to Claim ~~17~~¹⁵, wherein the calcium salt is present in the range of about 1.0% to about 6% by weight of the dry smokable filler material.
- 20 ~~22~~. A smoking material according to any one of the preceding claims, further comprising a non-alginic foaming agent.
- 21 ~~23~~. A smoking material according to Claim ~~22~~²⁰, wherein the non-alginic foaming agent is a foaming agent incapable of forming chemical cross-linkages.

- ~~40~~ ⁴⁸
~~22~~ ²⁰ ~~24~~ A smoking material according to Claim ~~22~~ or ²¹ ~~23~~, wherein the non-alginic foaming agent is a foaming surfactant.
- ~~23~~ ²² ~~25~~ A smoking material according to Claim ~~24~~, wherein the foaming surfactant is one or more of the group including celluloses capable of foaming, for example hydroxylpropyl cellulose, methyl cellulose or ethyl cellulose, starch, proteins, for example egg albumin, sugar esters.
- ~~24~~ ~~26~~ A smoking material according to any one of the preceding claims, further comprising a non-foaming agent capable of forming chemical cross-linkages.
- ~~25~~ ²⁴ ~~27~~ A smoking material according to Claim ~~26~~, wherein the non-foaming agent capable of forming chemical cross-linkages is a soluble alginate.
- ~~26~~ ²⁵ ~~28~~ A smoking material according to Claim ~~27~~, wherein the non-foaming agent capable of forming chemical cross-linkages is one or more of sodium alginate, ammonium alginate and potassium alginate.
- ~~27~~ ¹⁹ ~~29~~ A smoking material according to any one of Claims 1 to ~~21~~, further comprising a non-alginic foaming agent and a non-foaming agent capable of forming chemical cross-linkages.
- ~~28~~ ²⁷ ~~30~~ A smoking material according to Claim ~~29~~, wherein the non-alginic foaming agent is a foaming agent incapable of forming chemical cross-linkages.
- ~~31. A smoking material according to Claim 1, wherein the foaming agent and the agent capable of forming chemical cross-linkages are provided by different materials.~~
- ~~32. A smoking material according to Claim 31, wherein the smokable filler material comprises a non-alginic foaming agent.~~
- ~~33. A smoking material according to Claim 32, wherein the non-alginic foaming agent is incapable of forming chemical cross-linkages.~~
- ~~34. A smoking material according to Claim 32 or 33, wherein the non-alginic foaming agent may be a foaming surfactant.~~
- ~~35. A smoking material according to Claim 34, wherein the foaming surfactant is one or more of the group including celluloses capable of foaming, for example~~

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[hydroxylpropyl cellulose, methyl cellulose or ethyl cellulose, starch, proteins, for example egg albumin and sugar esters.

36. A smoking material according to any one of claims 32-35, wherein the non-alginic foaming agent is present in the range of about 0.5% to about 70% by weight of the dry smokable filler material.
37. A smoking material according to Claim 31, wherein the cross-linking agent is an agent which provides free calcium ions in aqueous solution.
38. A smoking material according to Claim 37, wherein the cross-linking agent is a calcium salt which salt is soluble or sparingly soluble at neutral pH (pH 7.0).
39. A smoking material according to Claim 37 or 38, wherein the cross-linking agent is one or more of calcium sulphate or calcium citrate.
40. A smoking material according to Claim 37, wherein the cross-linking agent is a calcium salt which is insoluble at neutral pH, which salt becomes soluble or sparingly soluble at acidic pH.
41. A smoking material according to Claim 40, wherein the cross-linking agent is calcium carbonate or calcium phosphate.
42. A smoking material according to Claim 37, wherein, the cross-linking agent is a calcium salt which is soluble or sparingly soluble, which salt forms an alkaline solution.
43. A smoking material according to Claim 42, wherein the cross-linking agent is calcium hydroxide.
44. A smoking material according to any one of Claims 38-43, wherein the cross-linking agent is present in a range of between about 0.5% and about 50% by weight of the dry smokable filler material.
45. A smoking material according to Claim 37, wherein the cross-linking agent is calcium carbonate, the cross-linking agent being present at between about 40% to about 60% by weight of the dry smokable filler material.
46. A smoking material according to any one of claims 38-43, wherein the cross-linking agent is further provided by tobacco.

~~47. A smoking material according to Claim 37, wherein the cross-linking agent is a tobacco material.~~

48. A smoking material according to Claim 46, wherein the calcium salt is present in a range of about 0.5% to about 8.0% by weight of the dry smokable filler material.

49. A smoking material according to Claim 46 or 47, wherein the tobacco is present in the range of about 10% to about 60% by weight of the dry smokable filler material.

50. A smoking material according to any one of claims 38-45, wherein the non-alginic foaming agent is present in the range of about 0.5% to about 70% by weight of the dry smokable filler material.

51. A smoking material according to Claim 46, wherein the non-alginic foaming agent is present in the range of about 2% to about 25% by weight of the dry smokable filler material.

52. A smoking material according to Claim 47, wherein the non-alginic foaming agent is present in the range of about 4% to about 35% by weight of the dry smokable filler material.

53. A smoking material according to any one of claims 31-52, wherein the non-foaming agent capable of forming chemical cross-linkages is a soluble alginate.

54. A smoking material according to Claim 53, wherein the soluble alginate is one or more of sodium alginate, ammonium alginate or potassium alginate.

55. A smoking material according to Claim 53 or 54, wherein the non-foaming agent capable of forming chemical cross-linkages is present in a range of about 3% to about 70% by weight of the dry smokable filler material.

56. A smoking material according to Claim 55, wherein when the cross-linking agent is in accordance with any one of claims 38-45, the non-foaming agent capable of forming chemical cross-linkages is present in the range of about 3% to about 70% by weight of the dry smokable filler material.

57. A smoking material according to Claim 55, wherein when the cross-linking agent is in accordance with claim 46, the non-foaming agent capable of forming chemical cross-

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~~linkages is present in the range of about 3% to about 55% by weight of the dry smokable filler material.~~

58. A smoking material according to Claim 55, wherein, when the cross-linking agent is tobacco the non-foaming agent capable of forming chemical cross-linkages is preferably present in the range of about 6% to about 60% by weight of the dry ~~smokable filler material.~~

29 59. A smoking material according to any one of the preceding claims, wherein the smokable filler material is a self-supporting foam when dried.

30 60. A smoking material according to Claim ²⁹59, wherein, when dried, smokable filler material has a moisture content in the range of 0% to about 30%.

31 61. A smoking material according to any one of the preceding claims, further comprising aerosol generating means.

32 62. A smoking material according to Claim ³¹61, wherein the aerosol generating means comprises aerosol forming means.

33 63. A smoking material according to Claim ³²62, wherein the aerosol forming means is one or more of polyhydric alcohols, glycerol, propylene glycol and triethylene glycol, esters or high boiling point hydrocarbons.

34 64. A smoking material according to any one of Claims ³¹⁻³³61-63, wherein the aerosol generating means is present at between 0% and 65% by weight of the dry smokable filler material.

35 65. A smoking material according to any one of the preceding claims, further comprising an inorganic filler material.

36 66. A smoking material according to Claim ³⁵65, wherein the inorganic filler material is a particulate material.

37 67. A smoking material according to Claim ^{35 36}65 or 66, wherein the inorganic filler material is one or more of perlite, zeolite, alumina, vermiculite, diatomaceous earth, colloidal silica, chalk, magnesium oxide, magnesium sulphate or magnesium carbonate.

38 68. A smoking material according to any one of the preceding claims, further comprising a colourant and/or a flavourant material.

39 ~~69~~. A smoking material according to Claim ~~68~~³⁸, wherein the flavourant and/or colourant is one or more of cocoa, liquorice, caramel, chocolate, toffee, tobacco extract flavours, menthol and vanillin.

40 ~~70~~. A smoking material according to Claim ~~68~~³⁸ or ~~69~~³⁹, wherein the flavourant and/or colourant is present in a range of about 0.2% to about 5% by weight of the dry smokable filler material.

41 ~~71~~. A smoking material according to any one of the preceding claims, further comprising a fibrous material.

42 ~~72~~. A smoking material according to Claim ~~71~~⁴¹, wherein the fibrous material is one or more of tobacco, wood pulp, cellulosic or alginic material.

43 ~~73~~. A smoking material according to any one of the preceding claims, further comprising a carbonaceous material.

44 ~~74~~. A smoking material according to any one of the preceding claims, further comprising a binder material.

45 ~~75~~. A smoking article comprising a rod of smoking material enwrapped in a wrapper, the smoking material comprising a blend, which blend incorporates the smokable filler material according to any one of claims 1-~~74~~⁴⁴.

46 ~~76~~. A smoking article comprising a rod of smoking material enwrapped in a wrapper, the smoking material consisting essentially of the smokable filler material according to any one of claims 1-~~74~~⁴⁴.

47 ~~77~~. A method of producing a foamed smokable filler material comprising the steps of:

- a) producing a foam from a foaming agent, which foaming agent is capable of forming chemical cross-linkages; *wherein the foaming agent is a foaming alginate*
- b) mixing said foam with a cross-linking agent;
- c) forming a slurry from said mix;
- d) casting said slurry; and
- e) drying said slurry to form a foamed sheet material.

48 ~~78~~. A method of producing a foamed smokable material comprising the steps of:

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- a) mixing a foaming agent capable of forming cross-linkages and a cross-linking agent ^{wherein the foaming agent is a foaming alginate} and
- b) extruding said mixture such that upon exiting an extruder die a stabilised foamed material is provided.

4.9.79. A smoking material substantially as hereinabove described.

50 ☒ see p 53a ...

56. 1. A smokable filler material comprising a foaming agent, an agent capable of forming chemical cross-linkages, and a cross-linking agent, wherein, when combined, the foaming agent in the foamed state thereof, the agent capable of forming chemical cross-linkages and the cross-linking agent provided a stabilised, foamed material.

...
See original
Claim 31

2. ~~A smoking material according to Claim 1, wherein the foaming agent and the agent capable of forming chemical cross-linkages are provided by the same material, thereby providing a foaming agent capable of forming chemical cross-linkages.~~
3. A smoking material according to Claim 1 or 2, wherein the foaming agent capable of forming chemical cross-linkages is a foaming alginate.
4. A smoking material according to Claim 3, wherein the foaming alginate is an esterified alginate.
5. A smoking material according to Claim 3 or 4, wherein the foaming alginate is propylene glycol alginate.
6. A smoking material according to any one of Claims 1-5, wherein the foaming agent capable of forming chemical cross-linkages is present at between about 30% and about 95% by weight of the dry smokable filler material.
7. A smoking material according to any preceding claim, wherein the cross-linking agent is an agent which provides free calcium ions in aqueous solution.
8. A smoking material according to Claim 7, wherein the cross-linking agent may be a calcium salt which salt is soluble or sparingly soluble at neutral pH (pH 7.0).
9. A smoking material according to Claim 7 or 8, wherein the cross-linking agent is one or more of calcium sulphate or calcium citrate.
10. A smoking material according to Claim 7, wherein the cross-linking agent is a calcium salt which is insoluble at neutral pH, which salt becomes soluble or sparingly soluble at acidic pH.
11. ~~A smoking material according to Claim 10, wherein the cross-linking agent is calcium carbonate or calcium phosphate.~~

- ~~24. A smoking material according to Claim 22 or 23, wherein the non-alginic foaming agent is a foaming surfactant.~~
25. A smoking material according to Claim 24, wherein the foaming surfactant is one or more of the group including celluloses capable of foaming, for example hydroxypropyl cellulose, methyl cellulose or ethyl cellulose, starch, proteins, for example egg albumin, sugar esters.
26. A smoking material according to any one of the preceding claims, further comprising a non-foaming agent capable of forming chemical cross-linkages.
27. A smoking material according to Claim 26, wherein the non-foaming agent capable of forming chemical cross-linkages is a soluble alginate.
28. A smoking material according to Claim 27, wherein the non-foaming agent capable of forming chemical cross-linkages is one or more of sodium alginate, ammonium alginate and potassium alginate.
- ~~29. A smoking material according to any one of Claims 1 to 21, further comprising a non-alginic foaming agent and a non-foaming agent capable of forming chemical cross-linkages.~~
40. 30. A smoking material according to Claim 29, wherein the non-alginic foaming agent is a foaming agent incapable of forming chemical cross-linkages.
- ~~31. A smoking material according to Claim 30 wherein the foaming agent and the agent capable of forming chemical cross-linkages are provided by different materials.*~~
51. 32. A smoking material according to Claim 31, wherein the smokable filler material comprises a non-alginic foaming agent.
52. 33. A smoking material according to Claim 32, wherein the non-alginic foaming agent is incapable of forming chemical cross-linkages.
53. 34. A smoking material according to Claim 32 or 33, wherein the non-alginic foaming agent may be a foaming surfactant.
54. 35. A smoking material according to Claim 34, wherein the foaming surfactant is one or more of the group including celluloses capable of foaming, for example

claim
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...

hydroxylpropyl cellulose, methyl cellulose or ethyl cellulose, starch, proteins, for example egg albumin and sugar esters.

- 55 36. A smoking material according to any one of claims ~~32-35~~⁵¹⁻⁵⁴, wherein the non-alginic foaming agent is present in the range of about 0.5% to about 70% by weight of the dry smokable filler material.
- 56 37. A smoking material according to Claim ~~31~~⁵⁰, wherein the cross-linking agent is an agent which provides free calcium ions in aqueous solution.
- 57 38. A smoking material according to Claim ~~37~~⁵⁶, wherein the cross-linking agent is a calcium salt which salt is soluble or sparingly soluble at neutral pH (pH 7.0).
- 58 39. A smoking material according to Claim ~~37~~⁵⁶ or ~~38~~⁵⁷, wherein the cross-linking agent is one or more of calcium sulphate or calcium citrate.
- 59 40. A smoking material according to Claim ~~37~~⁵⁶, wherein the cross-linking agent is a calcium salt which is insoluble at neutral pH, which salt becomes soluble or sparingly soluble at acidic pH.
- 60 41. A smoking material according to Claim ~~40~~⁵⁹, wherein the cross-linking agent is calcium carbonate or calcium phosphate.
- 61 42. A smoking material according to Claim ~~37~~⁵⁶, wherein, the cross-linking agent is a calcium salt which is soluble or sparingly soluble, which salt forms an alkaline solution.
- 62 43. A smoking material according to Claim ~~42~~⁶¹, wherein the cross-linking agent is calcium hydroxide.
- 63 44. A smoking material according to any one of Claims ~~38-43~~⁵⁷⁻⁶², wherein the cross-linking agent is present in a range of between about 0.5% and about 50% by weight of the dry smokable filler material.
- 64 45. A smoking material according to Claim ~~37~~⁵⁶, wherein the cross-linking agent is calcium carbonate, the cross-linking agent being present at between about 40% to about 60% by weight of the dry smokable filler material.
- 65 46. A smoking material according to any one of claims ~~38-43~~⁵⁷⁻⁶², wherein the cross-linking agent is further provided by tobacco.

- 66 47. A smoking material according to Claim ⁵⁶~~37~~, wherein the cross-linking agent is a tobacco material.
- 67 48. A smoking material according to Claim ⁶⁵~~46~~, wherein the calcium salt is present in a range of about 0.5% to about 8.0% by weight of the dry smokable filler material.
- 68 49. A smoking material according to Claim ^{65 66}~~46~~ or ~~47~~, wherein the tobacco is present in the range of about 10% to about 60% by weight of the dry smokable filler material.
- 69 50. A smoking material according to any one of claims ⁵⁷⁻⁶⁴~~38-45~~, wherein the non-alginic foaming agent is present in the range of about 0.5% to about 70% by weight of the dry smokable filler material.
- 70 51. A smoking material according to Claim ⁶⁵~~46~~, wherein the non-alginic foaming agent is present in the range of about 2% to about 25% by weight of the dry smokable filler material.
- 71 52. A smoking material according to Claim ⁶⁶~~47~~, wherein the non-alginic foaming agent is present in the range of about 4% to about 35% by weight of the dry smokable filler material.
- 72 53. A smoking material according to any one of claims ⁵⁹⁻⁷¹~~31-52~~, wherein the non-foaming agent capable of forming chemical cross-linkages is a soluble alginate.
- 73 54. A smoking material according to Claim ⁷²~~53~~, wherein the soluble alginate is one or more of sodium alginate, ammonium alginate or potassium alginate.
- 74 55. A smoking material according to Claim ^{72 73}~~53~~ or ~~54~~, wherein the non-foaming agent capable of forming chemical cross-linkages is present in a range of about 3% to about 70% by weight of the dry smokable filler material.
- 75 56. A smoking material according to Claim ⁷⁴~~55~~, wherein when the cross-linking agent is in accordance with any one of claims 38-45, the non-foaming agent capable of forming chemical cross-linkages is present in the range of about 3% to about 70% by weight of the dry smokable filler material.
- 76 57. A smoking material according to Claim ⁷⁴~~55~~, wherein when the cross-linking agent is in accordance with claim 46, the non-foaming agent capable of forming chemical cross-

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linkages is present in the range of about 3% to about 55% by weight of the dry smokable filler material.

77 38. A smoking material according to Claim ⁷⁴35, wherein, when the cross-linking agent is tobacco the non-foaming agent capable of forming chemical cross-linkages is preferably present in the range of about 6% to about 60% by weight of the dry smokable filler material.

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78 59. A smoking material according to any one of ~~the preceding~~ claims, wherein the smokable filler material is a self-supporting foam when dried.

79 60. A smoking material according to Claim ⁷⁸59, wherein, when dried, smokable filler material has a moisture content in the range of 0% to about 30%. 50-79

80 61. A smoking material according to any one of ~~the preceding~~ claims, further comprising aerosol generating means.

81 62. A smoking material according to Claim ⁸⁰61, wherein the aerosol generating means comprises aerosol forming means.

82 63. A smoking material according to Claim ⁸¹62, wherein the aerosol forming means is one or more of polyhydric alcohols, glycerol, propylene glycol and triethylene glycol, esters or high boiling point hydrocarbons.

83 64. A smoking material according to any one of Claims ⁸⁰⁻⁸²61-63, wherein the aerosol generating means is present at between 0% and 65% by weight of the dry smokable filler material. 50-83

84 65. A smoking material according to any one of ~~the preceding~~ claims, further comprising an inorganic filler material.

85 66. A smoking material according to Claim ⁸⁴65, wherein the inorganic filler material is a particulate material.

86 67. A smoking material according to Claim ^{84 85}65 or 66, wherein the inorganic filler material is one or more of perlite, zeolite, alumina, vermiculite, diatomaceous earth, colloidal silica, chalk, magnesium oxide, magnesium sulphate or magnesium carbonate.

87 68. A smoking material according to any one of ~~the preceding~~ claims, ⁵⁰⁻⁸⁶further comprising a colourant and/or a flavourant material.

- 88 ~~69~~. A smoking material according to Claim ~~68~~⁸⁷, wherein the flavourant and/or colourant is one or more of cocoa, liquorice, caramel, chocolate, toffee, tobacco extract flavours, menthol and vanillin.
- 89 ~~70~~. A smoking material according to Claim ~~68~~⁸⁷ or ~~69~~⁸⁸, wherein the flavourant and/or colourant is present in a range of about 0.2% to about 5% by weight of the dry smokable filler material.
- 90 ~~71~~. A smoking material according to any one of the preceding claims⁸⁰⁻⁸⁹, further comprising a fibrous material.
- 91 ~~72~~. A smoking material according to Claim ~~71~~⁹⁰, wherein the fibrous material is one or more of tobacco, wood pulp, cellulosic or alginic material.
- 92 ~~73~~. A smoking material according to any one of the preceding claims⁸⁰⁻⁹¹, further comprising a carbonaceous material.
- 93 ~~74~~. A smoking material according to any one of the preceding claims⁸⁰⁻⁹², further comprising a binder material.
- 94 ~~75~~. A smoking article comprising a rod of smoking material enwrapped in a wrapper, the smoking material comprising a blend, which blend incorporates the smokable filler material according to any one of claims 1-~~74~~⁹³.
- 95 ~~76~~. A smoking article comprising a rod of smoking material enwrapped in a wrapper, the smoking material consisting essentially of the smokable filler material according to any one of claims 1-~~74~~⁹³.
- ~~77. A method of producing a foamed smokable filler material comprising the steps of:~~
- ~~a) producing a foam from a foaming agent, which foaming agent is capable of forming chemical cross-linkages;~~
 - ~~b) mixing said foam with a cross-linking agent;~~
 - ~~c) forming a slurry from said mix;~~
 - ~~d) casting said slurry; and~~
 - ~~e) drying said slurry to form a foamed sheet material.~~
- ~~78. A method of producing a foamed smokable material comprising the steps of:~~

- a) ~~mixing a foaming agent capable of forming cross-linkages and a cross-linking agent; and~~
 - b) ~~extruding said mixture such that upon exiting an extruder die a stabilised foamed material is provided.~~
- 96 79. A smoking material substantially as hereinabove described.

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